**Notes Questions for the Unit 13, Part 3 Notes: Defense (The Immune System)**

Ms. Ottolini, AP Biology

1. Why is a secondary immune response often faster than a primary immune response? What types of immune cells / molecules are involved in a secondary immune response?

Memory B cells and memory cytotoxic T cells are present in the body after the initial (primary) infection. They can be quickly converted to plasma B cells (which make antibodies) and active cytotoxic T cells during a secondary infection to target naked pathogens floating in the body fluids and cells that have been infected by the pathogen, respectively.

1. How are helper T cells “activated?” Why are helper T cells considered the “connection” between innate / nonspecific immunity and aquired / specific immunity?

Macrophages (nonspecific) chop up antigen and present it on their cell surface to a helper T cell, helper T cell causes creation of B cells and cytotoxic T cells (both part of the specific immune response)

Macrophage = scout

Scout kills a random intruder and presents its head on a pike to military commander (helper T cell)

Military commander says to soldiers (B cells and cytotoxic T cells) “Kill anyone that looks like this guy)

B cells – soldiers that patrol the highway (blood vessels and lymph)

Cytotoxic T cells – soldiers at forts (kill intruders that have infiltrated the body cell already)

1. Is the human body’s ability to distinguish its own cells from foreign cells (ex: bacterial pathogens) part of the nonspecific or specific immune response?

Nonspecific (macrophage swallows anything foreign / not part of your body)

1. Why is it safe for kids who have had chicken pox in the past to spend time with kids who currently have chicken pox?

You have a secondary immune response that will quickly kill off the chicken pox virus if you encounter it again

1. Compare and contrast the humoral and cell-mediated immune pathways.

Humoral = B cells make antibodies to kill “naked pathogens” that have not infected a body cell and are free floating in the blood or lymph

Cell mediated = cytotoxic T cells kill human body cells that have been infected by the pathogen

1. How are BOTH the humoral and cell-mediated immune pathways initiated (i.e. triggered)?

Helper T cells stimulate the creation of B cells and cytotoxic T cells that are specific to a pathogen

1. Provide an example of an external and internal barrier in the innate immune system.

External Barriers = skin, saliva

Internal Barrier = Macrophage